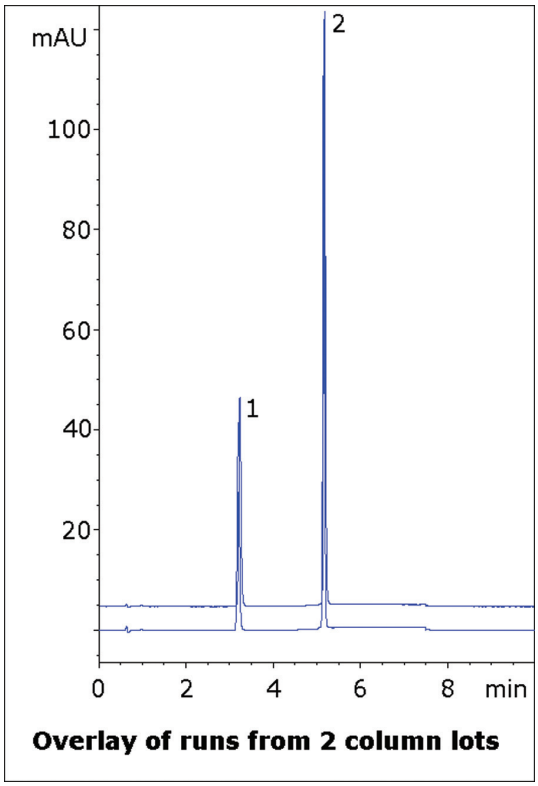
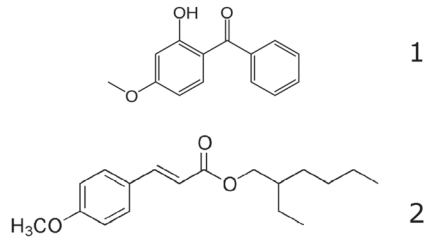
Oxybenzone and Octinoxate

Separation of two APIs in ChapStick® extract



Overlay of runs from 2 column lots



Note: These two compounds exhibit strong absorbance in the UV range, hence the wavelength of 288 nm that was chosen. This behavior accounts for their use as sunscreen agents; UV radiation that is absorbed by the compounds is then prevented from reaching the skin and causing damage.

Method Conditions

Column: Cogent Bidentate C18™, 4µm, 100Å

Catalog No.: 40018-75P

Dimensions: 4.6 x 75 mm

Solvents: A: DI H_2O / 0.1% formic acid (v/v)
B: Acetonitrile / 0.1% formic acid (v/v)

Gradient:

time (min.)	%B
0	60
1	60
4	100
6	100
7	60

Temperature: 40˚C

Post Time: 3 min

Injection vol.: 2µL

Flow rate: 1.0 mL/min

Detection: UV 288 nm

Sample: 250mg of ChapStick containing 7.5% octinoxate and 3.5% oxybenzone was weighed in a 25mL volumetric flask and a portion of 90/10 acetonitrile / DI H_2O was added. It was sonicated for 30 min and diluted to mark. Then a portion was filtered with a 0.45µm nylon syringe filter (MicroSolv Tech Corp.). The filtrate was diluted 1:10 for injections.

Peaks: 1. Oxybenzone
2. Octinoxate

t_0: 0.9 min

Discussion

This method shows how two common ingredients found in sunscreens and lip balms can be separated using the Cogent Bidentate C18 column. The two compounds are very hydrophobic, so a mobile phase gradient with significant organic content was used in order to avoid excessive retention. Likewise, a highly organic diluent should be used to adequately extract the compounds from the lip balm material. The figure shows an overlay of two runs from different column lots, demonstrating the lot-to-lot reproducibility of the Cogent Bidentate C18 stationary phase.

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